

REPORT

Data Report

Sample Collection BioGenesis Sediment Evaluation Passaic River, New Jersey

**Chemical Land Holdings, Inc.
Two Tower Center Blvd., Floor 10
East Brunswick, New Jersey**

November 2001

535110



BBL[®]
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

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Table of Contents

Section 1. Sediment Collection and Processing	1-1
1.1 Overview	1-1
1.2 Mobilization	1-1
1.3 Sediment Collection	1-1
1.4 Sample Processing	1-2
Section 2. Results	2-1
2.1 Analytical	2-1
2.2 BioGenesis Physical Testing	2-1

Figures

Figure 1	BGW Sediment Collection Station 296BGW
Figure 2	BGW Sediment Collection Stations 285BGW and 213BGW

Attachments

Attachment 1	Sediment Collection Work Plan
Attachment 2	Field Notes
Attachment 3	Chains of Custody and SDG Tracking Log
Attachment 4	Analytical Results
Attachment 5	BioGenesis Physical Characterization Results

1. Sediment Collection and Processing

1.1 Overview

In accordance with the Sediment Collection Work Plan for BioGenesis Evaluation – Fall 2000 (Work Plan) (see Attachment 1), Blasland, Bouck & Lee, Inc. (BBL) collected sediments in September 2000 from the Passaic River for shipment to BioGenesis, LLC (BGW) to evaluate the BioGenesisSM Sediment Washing process. This report presents the preliminary evaluation of the physical and chemical characteristics of the collected sediments.

The Work Plan specified that sediment was to be collected at three river locations (in the vicinity of core locations 213, 285, and 296 from the 1995 Remedial Investigation [RI] sampling program), each associated with a mudflat area. Sediment from the three areas was to be homogenized to create one composite sample.

1.2 Mobilization

BBL personnel (Greg Rabasco and Jason Gutkowski) mobilized to the Newark, NJ area on Monday, September 25, 2000, along with CLH's sediment homogenizer. The sediment homogenizer is a motorized cement mixer with a stainless steel drum designed to mix quantities of sediment too large for manual homogenization.

1.3 Sediment Collection

At each of the three targeted sampling locations (i.e., RI locations 213, 285 and 296), sediment cores were collected from approximately the midpoint of the width of the respective mudflat (i.e., between the river bank and outer edge of the exposed mudflat) during low tide. Cores were obtained by manually driving Lexan® tubing into the sediments. All three sampling locations were surveyed using Differential Global Positioning System (DGPS). Additional field information is provided below, along with Attachment 2 – Field Notes.

On the afternoon of September 25, 2000, the field crew mobilized to Rapp's Marina on the Passaic River, retrieved the BBL work boat, and proceeded downstream to RI sampling location 296 (approximately River Mile 5.5 – see Figure 1). At this location, two 3-inch diameter sediment cores were collected. Cores were collected in approximately 5.0 feet of water under flood tidal conditions. The two cores penetrated approximately 6.0 feet into the sediment, with a 5.2 foot recovery for each. At this location, a total of approximately 4 gallons of sediment were obtained. Sediments at location 296 BGW were generally characterized as a gray-brown silt (0-4 feet) to black silt (4-6 feet), and having a visible sheen with strong chemical odor (see Attachment 2).

On the morning of September 26, 2000, the field crew mobilized to Rapp's Marina, and then to RI sampling location 213 (approximately River Mile 1.0 - see Figure 2). Two 3-inch diameter sediment cores were collected in approximately 2.0 feet of water under ebb tidal conditions. The two cores penetrated 6.0 feet into the sediment, with a 5.5 foot recovery for each. At this location, a total of approximately 4 gallons of sediment were obtained. Sediments at location 213 BGW were generally characterized as a gray-brown silt (0-1 feet and 3-6 feet) to dark brown/black silt (1-3 feet), and having a visible sheen with strong chemical odor (see Attachment 2).

The field crew then proceeded to RI sampling location 285 (approximately River Mile 2.3- see Figure 2). The sampling location on this mudflat was established approximately 400 feet upriver of RI core location 285 to avoid construction activities at the Diamond Alkali Site. Sediments were collected closer to the outer edge of the mudflat than the midpoint due to lower tidal conditions. However, the field crew confirmed that the sample was taken within the mudflat.

At this location, two 3-inch diameter sediment cores were collected in approximately 1.0 feet of water under ebb tidal conditions. The two cores penetrated 6.0 feet into the sediment, with a 5.4 foot recovery for each. A total of approximately 4 gallons of sediment were collected. Sediments at location 285 BGW were generally characterized as a dark-brown to black silt (0-6 feet) and having a visible sheen with strong chemical odor (see Attachment 2).

All collected sediments from each sampling location were stored separately in decontaminated, covered stainless steel containers until homogenization. On the afternoon of September 26, 2000, the field crew demobilized from the river and mobilized to the Kearny field trailer for sample processing.

1.4 Sample Processing

At the field trailer, the homogenizer was decontaminated according to the Ecological Sampling Plan (ESP) Work Plan, Standard Operating Procedure (SOP) 1. Next, a total of approximately 12 gallons (4 gallons from each location) of collected sediment were combined in the homogenizer and mixed for approximately 45 minutes.

Once homogenized, sediments were placed in two 3.5 gallon polyethylene buckets, sealed, and transferred to a cooler for shipment to BGW. In addition, one sediment sample (PR-BG-SD-1) was prepared for distribution to Lancaster Laboratories, Alta Laboratories, and B&B Laboratories for CLH's standard suite of sediment analyses (Lancaster Laboratories: semivolatile organics, pesticides and PCB Aroclors, chlorinated herbicides, inorganics and cyanide, grain size, percent moisture, total organic carbon, ammonia [as NH_3] and AVS/SEM; Alta Laboratories: PCB congeners/homologues and PCDD/PCDFs; and B&B Laboratories: high resolution PAHs and organotins) (see Attachment 3 - Chains of Custody and SDG Tracking Log). Two additional sediment volumes were sent to each laboratory to be used as MS and MSD samples.

Prior to shipment, all samples were placed in coolers, packed with vermiculite and ice, with the chain of custody included. All coolers were shipped (to BGW and laboratories) via FedEx on September 26, 2000 for next day delivery (priority).

Approximately 3.5 gallons of sediments remained after the samples were prepared. This sediment volume was placed in a 3.5 gallon polyethylene container, sealed, and stored inside the BBL Kearny trailer. The homogenizer was cleaned and decontaminated, and also stored at the Kearny field trailer, as directed by CLH. The field crew left the site on the evening of September 26, 2000.

2. Results

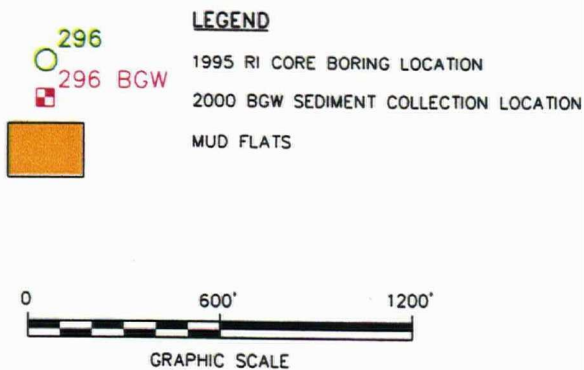
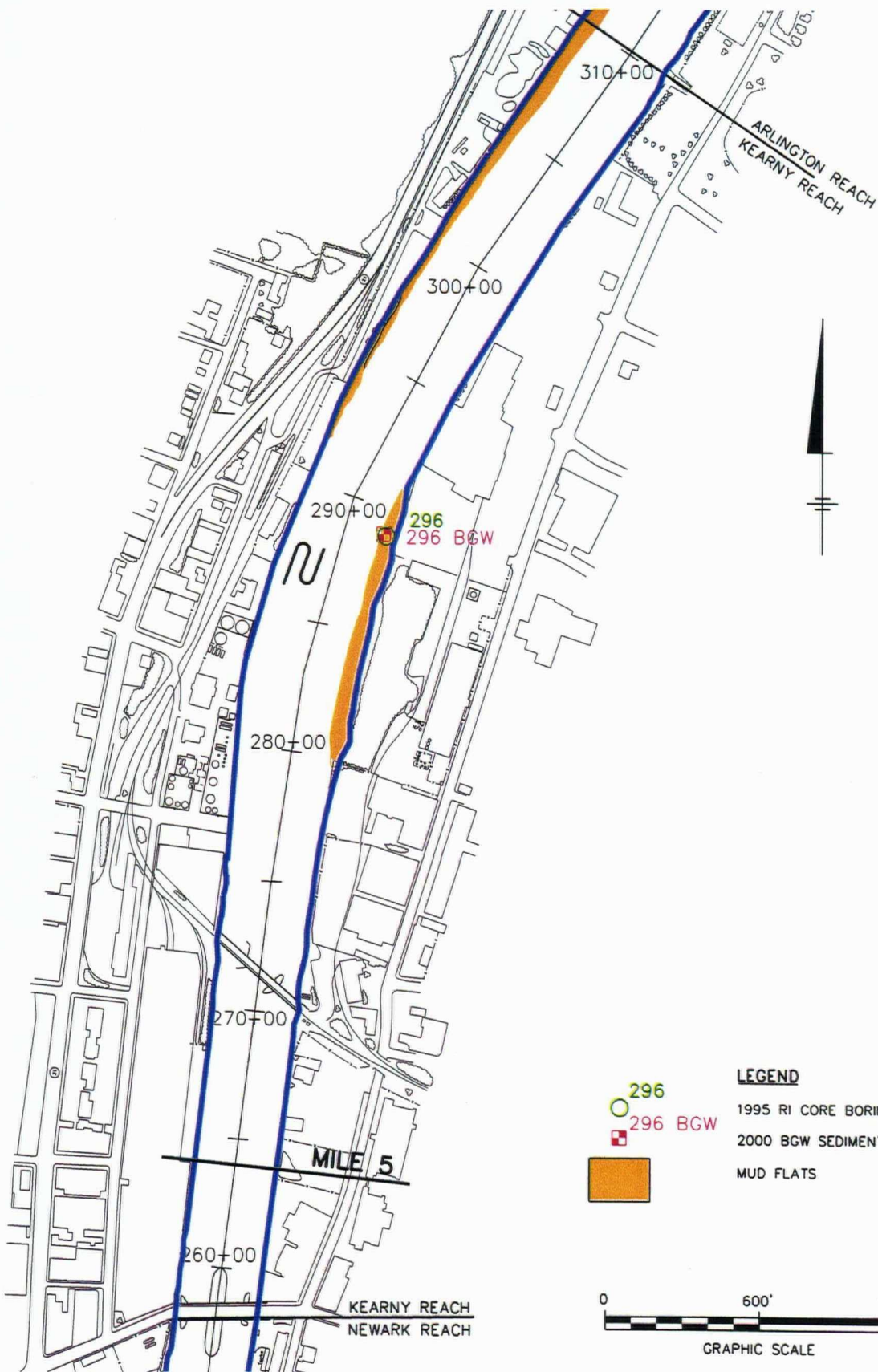
2.1 Analytical

Attachment 4 presents the sediment sample (PR-BG-SD-1) analytical results received from each of the respective laboratories.

2.2 BioGenesis Physical Testing

In November 2000, BGW conducted a preliminary evaluation of the sediment's physical characteristics including grain size analysis and specific gravity measurement. According to BGW (as presented in a letter included as Attachment 5), approximately 90% of the sediments had grain sizes between 10 and 50 micrometers, and no more than 10% (of the 90%) had a specific gravity less than 1.4. BGW's preliminary finding was "that the sediments are an excellent candidate for washing due to their physical characteristics." BGW estimated that "washing effectiveness on CLH sediment from the Passaic River will be between 80 to 90%." Based on this evaluation, BioGenesis recommended performance of more extensive demonstration processing.

Figures

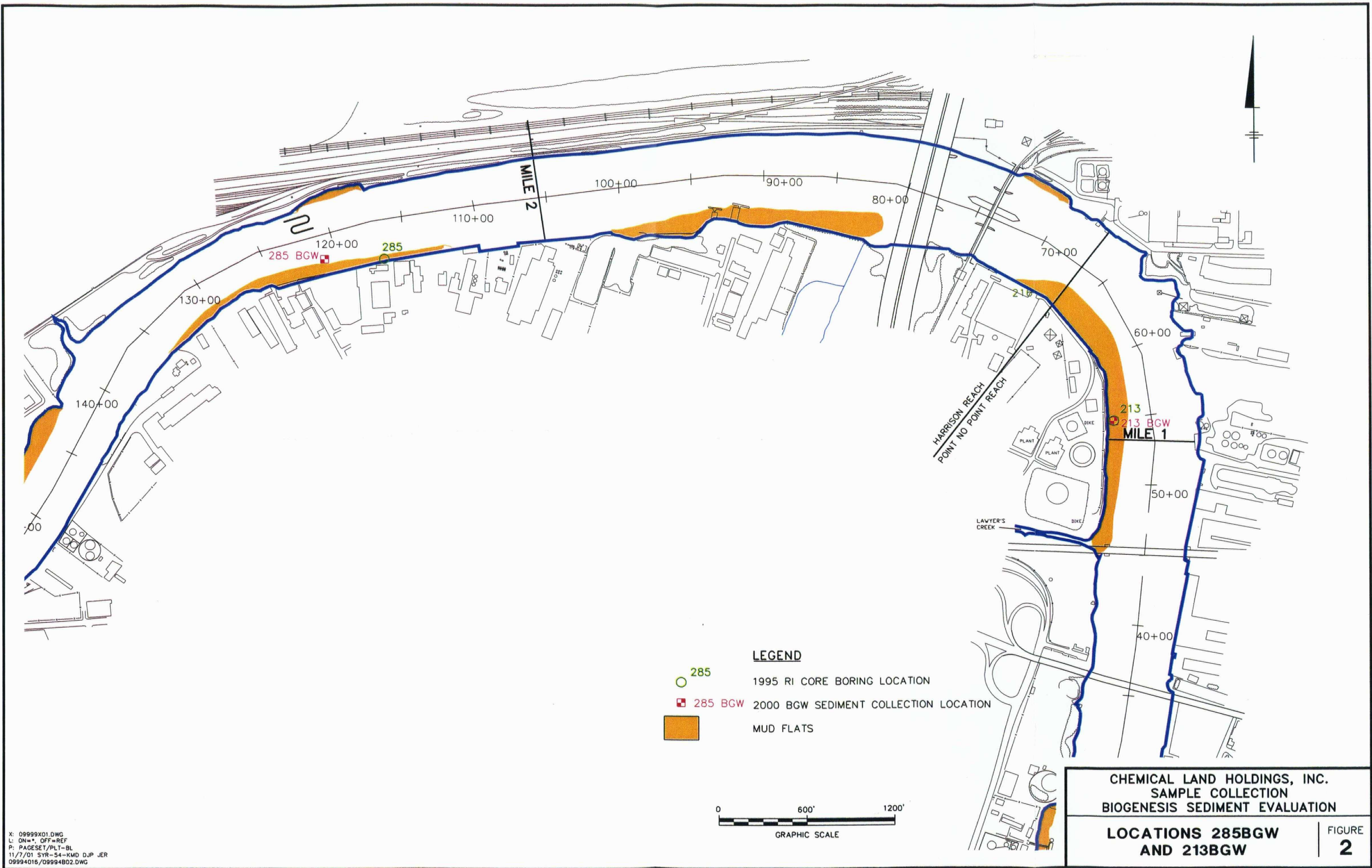


CHEMICAL LAND HOLDINGS, INC.
SAMPLE COLLECTION
BIOGENESIS SEDIMENT EVALUATION

LOCATION 296BGW

FIGURE
1

X: 09999X01.DWG
L: ON=*, OFF=REF
P: STD-PCP/AP
11/7/01 SYR-54-KMD DJP JER
09994016/09994B01.DWG



X: 09999X01.DWG
 L: DN=*, OFF=REF
 P: PAGESET/PLT-BL
 11/7/01 SYR-54-KMD DJP JER
 09994015/09994B02.DWG

ATTACHMENT 1

Chemical Land Holdings, Inc.

Sediment Collection Work Plan for BioGenesis Evaluation – Fall 2000

Under this Work Plan, Blasland, Bouck & Lee, Inc. (BBL) will collect sediments from the Passaic River Study Area (Study Area) for evaluation by BioGenesis, LLC (BGW). Specifically, under this Work Plan, BBL will:

1. Coordinate transport of the Chemical Land Holdings, Inc. (CLH) homogenizer/mixer from Springborn Laboratories in Wareham, MA to BBL's Kearny Field Office.
2. Obtain equipment required for coring, including:
 - 14' - 16' motorized boat
 - 2-inch, 3-inch, and 4-inch manual corers and associated equipment
 - 2-inch, 3-inch, and 4-inch Lexan tubing (one set per location)
 - push rods
 - metal probe rod
 - stainless steel containers (10 gallon volume minimum)
 - 3 or 5-gallon polyethylene containers for sediment shipment
 - analytical sampling containers
 - decontamination equipment
 - CLH sediment homogenizer
 - DGPS unit
 - Chains of custody
 - Field log book
 - Shipping manifests
3. Establish a clean work area at the Kearny field office for homogenizing sediments and generating laboratory samples.
4. Decontaminate coring equipment and Lexan tube sections in accordance with Ecological Sampling Plan (ESP) SOP No. 1 - Decontamination
5. Mobilize to the Kearny boat launch, and establish an order of sampling at the three areas based upon the tidal conditions (see Table 1 for tidal chart). Equipment on the boat will include at least one 4-inch, one 3-inch and two 2-inch diameter Lexan tube sections per sampling location.
6. At each of the pre-selected sampling areas (near RI sampling locations 213, 285, 296 [see Table 2 for sampling location coordinates]), establish a sampling location approximately halfway between the bank and outer edge of the mudflat. Probe the sediments to assess depth and sediment compaction.
7. Select proper length and diameter tube based on water depth and sediment compaction. Push manual corer/Lexan tube into the sediments at selected location. Push/turn the corer/Lexan tube to a minimum sediment depth of 5 feet (6 feet maximum). Plug tube end or apply vacuum to prevent sediment loss when withdrawing. Withdraw the corer/Lexan tube.

8. Observe and record the sediment type, color, compaction, volume collected, etc. in field log.
9. While on the boat, remove sediments from corer/Lexan tube and place into a stainless steel container. Assess sediment volume recovered (and depth). If additional sediment volume is required, perform manual coring again and combine sediments in the stainless steel container. A total of approximately 3 to 4 gallons of sediments are needed from each of the three locations.
10. Survey the coordinates of the sampling location(s) using Differential Global Positioning System (DGPS), and record in field log.
11. Take photographs of sediment sampling location, process, and collected sediments, as appropriate.
12. Proceed to the next sampling location. Use new decontaminated Lexan tubing at each sampling location. Proceed through the same sediment collection steps listed above at the two remaining locations. Sediments from the different locations can be combined in the same containers for transport.
13. Return to the Kearny field office. Homogenize the sediments from the three sampling locations using the CLH homogenizer (i.e., sediment mixer).
14. Collect a 5-gallon sample of the homogenized sediments for shipment to BGW, Milwaukee, WI. In addition, collect a set of homogenized sediment samples for Alta, Lancaster, and B & B laboratories (see attached Table 3 for list of analyses).
15. Complete chains of custody, shipping manifests, and CLH SDG forms. Package samples in accordance with the CLH ESP QAPP and ship to the laboratories.
16. Decontaminate all coring and sampling equipment. Remaining sediments not shipped to the laboratories are to be sealed in a 5-gallon container, marked and appropriately stored at the Kearny trailers.

Table 1
Tidal Information
Kearny Point
Passaic River
September/October 2000

MONTH	DAY	TIME	HEIGHT (ft)	TIME	HEIGHT (ft)	TIME	HEIGHT (ft)	TIME	HEIGHT (ft)
Sept.	25	111 a.m.	L -0.2	655 a.m.	H 6.0	123 p.m.	L -0.1	711 p.m.	H 6.6
Sept.	26	201 a.m.	L -0.5	745 a.m.	H 6.4	216 p.m.	L -0.3	801 p.m.	H 6.7
Sept.	27	249 a.m.	L -0.6	831 a.m.	H 6.7	308 p.m.	L -0.5	847 p.m.	H 6.7
Sept.	28	335 a.m.	L -0.7	916 a.m.	H 6.8	356 p.m.	L -0.5	933 p.m.	H 6.4
Sept.	29	379 a.m.	L -0.6	1001 a.m.	H 6.7	443 p.m.	L -0.3	1019 p.m.	H 6.1
Sept.	30	501 a.m.	L -0.2	1048 a.m.	H 6.6	528 p.m.	L 0.0	1109 p.m.	H 5.8
Oct.	1	543 a.m.	L 0.1	1136 a.m.	H 6.2	613 p.m.	L 0.3		
Oct.	2	1200 a.m.	H 5.4	624 a.m.	L 0.6	1225 p.m.	H 6.0	701 p.m.	L 0.8
Oct	3	1253 a.m.	H 5.1	708 a.m.	L 1.0	115 p.m.	H 5.6	756 p.m.	L 1.2
Oct	4	146 a.m.	H 4.7	801 a.m.	L 1.5	205 p.m.	H 5.4	859 p.m.	L 1.4
Oct	5	240 a.m.	H 4.5	907 a.m.	L 1.7	258 p.m.	H 5.2	1002 p.m.	L 1.4
Oct	6	337 a.m.	H 4.4	1011 a.m.	L 1.7	354 p.m.	H 5.1	1058 p.m.	L 1.3
Oct	7	436 a.m.	H 4.5	1108 a.m.	L 1.6	453 p.m.	H 5.2	1146 p.m.	L 1.0
Oct	8	533 a.m.	H 4.7	1158 a.m.	L 1.4	549 p.m.	H 5.3		
Oct	9	1231 a.m.	L 0.8	623 a.m.	H 4.9	1245 p.m.	L 1.0	637 p.m.	H 5.5
Oct	10	114 a.m.	L 0.6	705 a.m.	H 5.3	131 p.m.	L 0.8	719 p.m.	H 5.8
Oct	11	155 a.m.	L 0.2	742 a.m.	H 5.8	216 p.m.	L 0.5	756 p.m.	H 5.9
Oct	12	236 a.m.	L 0.0	815 a.m.	H 6.0	300 p.m.	L 0.2	832 p.m.	H 6.0
Oct	13	315 a.m.	L -0.1	847 a.m.	H 6.2	343 p.m.	L 0.0	908 p.m.	H 6.0
Oct	14	355 a.m.	L -0.2	919 a.m.	H 6.4	426 p.m.	L -0.1	946 p.m.	H 5.9
Oct	15	433 a.m.	L -0.2	956 a.m.	H 6.6	510 p.m.	L -0.1	1031 p.m.	H 5.6
Oct	16	513 a.m.	L -0.1	1040 a.m.	H 6.4	555 p.m.	L 0.0	1124 p.m.	H 5.4
Oct	17	554 a.m.	L 0.1	1132 a.m.	H 6.3	646 p.m.	L 0.2		
Oct	18	1225 a.m.	H 5.2	642 a.m.	L 0.5	1232 p.m.	H 6.2	748 p.m.	L 0.5
Oct	19	129 a.m.	H 5.1	745 a.m.	L 0.7	136 p.m.	H 6.1	857 p.m.	L 0.6
Oct	20	232 a.m.	H 5.1	902 a.m.	L 0.9	241 p.m.	H 5.9	1005 p.m.	L 0.5
Oct	21	336 a.m.	H 5.2	1015 a.m.	L 0.8	349 p.m.	H 5.9	1105 p.m.	L 0.2
Oct	22	441 a.m.	H 5.4	1148 a.m.	L 0.6	457 p.m.	H 5.9	1158 p.m.	L 0.0
Oct	23	543 a.m.	H 5.8	1215 p.m.	L 0.2	600 p.m.	H 6.0		
Oct	24	1249 a.m.	L -0.2	638 a.m.	H 6.1	108 p.m.	L 0.0	655 p.m.	H 6.1
Oct	25	136 a.m.	L -0.5	726 a.m.	H 6.4	200 p.m.	L -0.2	743 p.m.	H 6.1
Oct	26	223 a.m.	L -0.5	810 a.m.	H 6.7	249 p.m.	L -0.3	828 p.m.	H 6.1
Oct	27	308 a.m.	L -0.5	852 a.m.	H 6.7	336 p.m.	L -0.3	911 p.m.	H 6.0
Oct	28	351 a.m.	L -0.3	933 a.m.	H 6.6	421 p.m.	L -0.2	954 p.m.	H 5.6
Oct	29	332 a.m.	L -0.1	915 a.m.	H 6.3	404 p.m.	L -0.1	940 p.m.	H 5.3
Oct	30	412 a.m.	L 0.2	959 a.m.	H 6.1	447 p.m.	L 0.2	1030 p.m.	H 4.9
Oct	31	450 a.m.	L 0.7	1046 a.m.	H 5.8	531 p.m.	L 0.6	1123 p.m.	H 4.7

Notes:

H - High Tide

L - Low Tide

Tidal information obtained from the National Oceanic and Atmospheric Administration (NOAA).

TABLE 2
NEW JERSEY STATE PLANE
COORDINATES
BIOGENESIS SEDIMENT COLLECTION
SEPTEMBER 26, 2000

LOCATION	NAD 1927 NORTHING	NAD 1927 EASTING
213BGW	694,057	2,151,910
285BGW	695,204	2,146,917
296BGW	701,862	2,139,471

Notes:

NAD – North American Datum

Table 3

Chemical Land Holdings, Inc.
BioGenesis Sediment Collection
Number of Samples and Laboratory Analyses

Matrix	Laboratory	No. of Samples	Analyses	Glassware Needed per sample (multiply by 3 to include MS/MSD)
Sediment	Lancaster	1 plus MS/MSD	<ul style="list-style-type: none"> • Semivolatile Organics • Pesticides and Aroclor PCBs • Chlorinated Herbicides • Inorganics and cyanide • Grain Size • Percent Moisture • Total Organic Carbon • Ammonia (as NH₃) 	Two 1-liter glass
			<ul style="list-style-type: none"> • Acid Volatile Sulfide/ Simultaneously Extractable Metals (AVS/SEM) 	One 4-oz glass; minimal headspace
			<ul style="list-style-type: none"> • TEPH 	One 4-oz glass; minimal headspace
	Alta	1 plus MS/MSD	PCB Congeners/Homologues PCDDs/PCDFs	One 1-liter glass
	B & B	1 plus MS/MSD	HRGC/LMRS SIM PAHs Organotins	One 1-liter glass
	BGW	One 5-gallon container	Not applicable	5-gallon volume (no MS/MSD)

Notes:

1. BBL will alert laboratories to any changes in the sampling program.
2. Analytical methods are provided in the ESP QAPP (March/July 1999).
3. Duplicate sample and rinse blank will not be submitted.

Attachment 2

Field Notes



Passaic River
BioGenesis
Sediment Sampling

NATIONAL
425

$$\sin \theta = \frac{b}{c} = \cos A \quad \cos \theta = \frac{a}{c} = \sin A$$

$$\cos \theta = \frac{\sin \delta}{\sin \delta_0} \quad \text{and} \quad \sin \delta = \frac{\sin \delta_0}{\sin \theta}$$

$$\sin A = \frac{a}{c} = \sin B \quad \cos A = \frac{b}{c} = \sin B$$

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المجلس الأعلى للدراسات الإسلامية

100-443887-100

1961-1962

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

$$R_{\text{eff}} = \frac{R_{\text{eff}}}{\frac{R_{\text{eff}}}{\text{min}} + \frac{R_{\text{eff}}}{\text{max}}}$$

[illegible]

100-443887-100

[illegible]

100-443887-111

05-11-1

$$a \sin B \sin C$$

CONCLUSIONS



Location: 296

Date 7/25/00

Water Depth: 5.0'

Location:

701,864.963 North

2,139,468.765 East

40° 45' 32.64" N ✓

74° 9' 46.23" W

Sediment Penetrated : 6.00

Sediment Recovered: 5.20

2 cores collected + 3" cores

Description:

0'-4'-Gray-brown silt

4'-6'- Dark-brown to black s.H., with
visible sheens & strong odor

* See log page 6

②*

Location: 213

Date: 9/26/00

Water Depth: 2.0'

Location:

694,047.563 North
2,151,905.847 East

40° 44' 14.75" N

74° 7' 5.17" W

Sediment Penetrated: 6.0'

Sediment Recovered: 5.5'

2 cores collected

Descriptions

0'-1'- Gray-brown silt

1'-3'- Dark-brown to black silt with
slight sheen, strong odor

3'-6'- Gray-brown silt

* see log page 6

*③

Location: 285

Date: 9/26/00

Water Depth: 1.0'

Location:

695,201.387 North
2,146,512.891 East

40° 44' 26.40" N

74° 8' 15.15" W

Sediment Penetrated: 6.0'

Sediment Recovered: 5.4'

2 cores collected

Description:

0'-6'- Dark-brown to black silt,
very strong odor, visible
sheen

* see log page 6

* (4)

9/26/00

Approximately 4 gallons of sediment
was collected from each location
All 12 gallons were mixed with
CLH's sediment mixer/homogenizer
for approximately 45 minutes
This 12 gallon sample was given
the ID of:

PR-BG-SD-1

The following samples were
sent to the following labs:

B&B Labs - 3 - 1 liter bottles for
the following analysis:
HRGC/LMRS SIM PAHs
Organotins (1 liter)
MS/MSD (2 liters)

Alta Labs - 3 - 1 liter bottles for
the following analysis:
PCB congeners/Homologues
PCDDs/PCDFs (1 liter)
MS/MSD (2 liters)

* See log page 6

* (5)

Lancaster Labs - 6 1 liter bottles
6 402 bottles for
the following analysis:

SVOCs; Pesticides; Aroclor PCBs;
Chlorinated Herbicides; Inorganics;
Cyanide; Grain Size; Percent Moisture;
TOC; Ammonia (as NH_3); AVS/SEM;
and TEPH (2 1 liter + 2 402 bottles)
MS/MSD - 4 1 liter + 4 402 bottles
(Note: AVS/SEM + TEPH were to be
analyzed from the 402 bottles which
were filled with no head-space)

BioGenesis Enterprises - 2 - 3.5 gallon
containers
Approximately 6 gallons sent for
Experimental Purposes

Extra Volume - 1 - 3.5 gallon container
Approximately 2-3 gallons
stored at Kearny field office

* See log page 6

⑥

1/16/01

* indicates data added on 1/16/01
(~~et~~ page #'s on prev. pages)

* Field Crew Members:

Greg Rabasco

Jason Gutkowski (recorder)

* DGPS unit information:

Leica Inc

Model #: MX8602

Serial #: 013

Attachment 3

Chains of Custody and SDG Tracking Log

**6723 Towpath Road, P.O. Box 66
Syracuse, New York 13214-0066
TEL: (315) 446-9120**

CHAIN OF CUSTODY RECORD

[illegible]

**6723 Towpath Road, P.O. Box 66
Syracuse, New York 13214-0066
TEL: (315) 446-9120**

CHAIN OF CUSTODY RECORD

PROJ. NO.		PROJECT NAME		SAMPLERS: (Signature)		STATION LOCATION		REMARKS		
STA. NO.	DATE	TIME	COMP.	GRAB						
099.99.705	Passaic River Sediment - BioGenesis Characterization									
	9/26/00	—	x		PR-BG-SD-1	12	x			
						Please complete the following analysis on sediment sample PR-BG-SD-1: SVOCs; Pesticides - Atrazine PCBs; Chlorinated Herbicides; Inorganics; CN; Grain Size; Percent Moisture; TOC; Ammonia (as NH ₃); AVS/SEM; and TEPH				
						Please note extra volume has been included to complete an MS/MSD for the above parameters				
Relinquished by: (Signature)		DATE	TIME	Received by: (Signature)		Relinquished by: (Signature)		DATE	TIME	Relinquished by: (Signature)
		9/26/00	20:00							
Relinquished by: (Signature)		DATE	TIME	Received by: (Signature)		Relinquished by: (Signature)		DATE	TIME	Relinquished by: (Signature)
Relinquished by: (Signature)		DATE	TIME	Received for Laboratory by: (Signature)		DATE		TIME		Remarks:
										Del. Ex to Lancaster Laboratory # 8183 4244 8600

6723 Towpath Road, P.O. Box 66
Syracuse, New York 13214-0066
TEL: (315) 446-9120

CHAIN OF CUSTODY RECORD

[illegible]

SDG TRACKING LOG

SDG Number B101

SDG Open Dates 9/26/00

Sample Matrix SEDIMENT

SDG Close Date 9/26/00

Sample #	Sample ID	MS/MSD	Comments
1	PR-BG-SD-1	MS/MSD	(ADDITIONAL BULK VOLUME SENT TO
2			BIOGENESIS ENTERPRISES, INC.)
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
Trip or Field Blank		N/A	
Trip or Field Blank		N/A	
Trip or Field Blank		N/A	
Trip or Field Blank		N/A	

Notes: The SDG must not exceed 20 field samples. Trip or Field Blanks do not count towards the sample total. Check which of the 20 samples has been collected to include extra volume for MS/MSD and assigned as such.

Attachment 4

Analytical Results

Table 1
Chemical Land Holdings, Inc.
Sample Collection BioGenesis Sediment Evaluation
Analytical Results - Alta Laboratories

Analyte	Result	Units	LQ
PCB Congeners/Homologues			
PCB-1	4,810	ng/kg	
PCB-3	5,660	ng/kg	
PCB-8	79,500	ng/kg	
PCB-15	66,000	ng/kg	
PCB-18	260,000	ng/kg	
PCB-28	383,000	ng/kg	
PCB-44	272,000	ng/kg	
PCB-52	607,000	ng/kg	
PCB-66	327,000	ng/kg	
PCB-77	24,200	ng/kg	
PCB-81	3,800	ng/kg	
PCB-87	204,000	ng/kg	
PCB-90/101	587,000	ng/kg	
PCB-118	326,000	ng/kg	
PCB-123	105,000	ng/kg	
PCB-105	58,200	ng/kg	
PCB-114	3,270	ng/kg	
PCB-126	1,170	ng/kg	
PCB-128	79,200	ng/kg	
PCB-138	610,000	ng/kg	
PCB-153	544,000	ng/kg	
PCB-167	34,500	ng/kg	
PCB-156	65,600	ng/kg	
PCB-157	13,200	ng/kg	
PCB-169	467	ng/kg	U
PCB-170	100,000	ng/kg	
PCB-180	211,000	ng/kg	
PCB-183	52,200	ng/kg	
PCB-184	303	ng/kg	
PCB-187	106,000	ng/kg	
PCB-189	7,770	ng/kg	
PCB-202	6,390	ng/kg	
PCB-194	30,200	ng/kg	
PCB-195	11,300	ng/kg	
PCB-206	14,300	ng/kg	
PCB-207	1,160	ng/kg	
PCB-209	7,020	ng/kg	
Total monoCB	12,000	ng/kg	
Total diCB	249,000	ng/kg	
Total triCB	2,270,000	ng/kg	
Total tetraCB	6,570,000	ng/kg	
Total pentaCB	3,110,000	ng/kg	
Total hexaCB	2,290,000	ng/kg	
Total heptaCB	757,000	ng/kg	
Total octaCB	119,000	ng/kg	
Total nonaCB	18,900	ng/kg	

Table 1
Chemical Land Holdings, Inc.
Sample Collection BioGenesis Sediment Evaluation
Analytical Results - Alta Laboratories

Analyte	Result	Units	LQ
PCDDs/PCDFs			
2,3,7,8-TCDD	1,610	ng/kg	
1,2,3,7,8-PeCDD	19	ng/kg	
1,2,3,4,7,8-HxCDD	13	ng/kg	
1,2,3,6,7,8-HxCDD	72	ng/kg	
1,2,3,7,8,9-HxCDD	36	ng/kg	
1,2,3,4,6,7,8-HpCDD	784	ng/kg	
OCDD	9,240	ng/kg	
2,3,7,8-TCDF	61	ng/kg	
1,2,3,7,8-PeCDF	29	ng/kg	
2,3,4,7,8-PeCDF	76	ng/kg	
1,2,3,4,7,8-HxCDF	310	ng/kg	
1,2,3,6,7,8-HxCDF	87	ng/kg	
2,3,4,6,7,8-HxCDF	50	ng/kg	
1,2,3,7,8,9-HxCDF	15	ng/kg	
1,2,3,4,6,7,8-HpCDF	1,050	ng/kg	
1,2,3,4,7,8,9-HpCDF	44	ng/kg	
OCDF	2,440	ng/kg	
Total TCDD	1,830	ng/kg	
Total PeCDD	94	ng/kg	
Total HxCDD	345	ng/kg	
Total HpCDD	1,620	ng/kg	
Total TCDF	2,780	ng/kg	
Total PeCDF	1,620	ng/kg	
Total HxCDF	1,130	ng/kg	
Total HpCDF	1,540	ng/kg	

Notes:

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

LQ - Lab Qualifier

ng/kg - nanograms per kilogram

Sample collected on September 26, 2000.

Table 2
Chemical Land Holdings, Inc.
Sample Collection BioGenesis Sediment Evaluation
Analytical Results - B & B Laboratories

Analyte	Result	Units	LQ
High Resolution PAHs			
Naphthalene	519	Conc. (ng/dry g)	
C1-Naphthalenes	647	Conc. (ng/dry g)	
C2-Naphthalenes	989	Conc. (ng/dry g)	
C3-Naphthalenes	1,580	Conc. (ng/dry g)	
C4-Naphthalenes	2,000	Conc. (ng/dry g)	
Biphenyl	138	Conc. (ng/dry g)	
Acenaphthylene	521	Conc. (ng/dry g)	
Acenaphthene	254	Conc. (ng/dry g)	
Fluorene	407	Conc. (ng/dry g)	
C1-Fluorenes	378	Conc. (ng/dry g)	
C2-Fluorenes	849	Conc. (ng/dry g)	
C3-Fluorenes	937	Conc. (ng/dry g)	
Phenanthrene	2,690	Conc. (ng/dry g)	
Anthracene	1,620	Conc. (ng/dry g)	
C1-Phenanthrenes/Anthracenes	2,700	Conc. (ng/dry g)	
C2-Phenanthrenes/Anthracenes	3,310	Conc. (ng/dry g)	
C3-Phenanthrenes/Anthracenes	2,830	Conc. (ng/dry g)	
C4-Phenanthrenes/Anthracenes	1,390	Conc. (ng/dry g)	
Dibenzothiophene	268	Conc. (ng/dry g)	
C1-Dibenzothiophenes	654	Conc. (ng/dry g)	
C2-Dibenzothiophenes	1,370	Conc. (ng/dry g)	
C3-Dibenzothiophenes	1,440	Conc. (ng/dry g)	
Fluoranthene	5,810	Conc. (ng/dry g)	
Pyrene	5,540	Conc. (ng/dry g)	
C1-Fluoranthenes/Pyrenes	4,400	Conc. (ng/dry g)	
C2-Fluoranthenes/Pyrenes	2,680	Conc. (ng/dry g)	
C3-Fluoranthenes/Pyrenes	1,050	Conc. (ng/dry g)	
Benz(a)anthracene	2,680	Conc. (ng/dry g)	
Chrysene	2,910	Conc. (ng/dry g)	
C1-Chrysenes	2,850	Conc. (ng/dry g)	
C2-Chrysenes	1,360	Conc. (ng/dry g)	
C3-Chrysenes	461	Conc. (ng/dry g)	
C4-Chrysenes	284	Conc. (ng/dry g)	
Benzo(b)fluoranthene	3,560	Conc. (ng/dry g)	
Benzo(k)fluoranthene	1,350	Conc. (ng/dry g)	
Benzo(e)pyrene	2,040	Conc. (ng/dry g)	
Benzo(a)pyrene	2,810	Conc. (ng/dry g)	
Perylene	1,180	Conc. (ng/dry g)	
Indeno(1,2,3-c,d)pyrene	2,150	Conc. (ng/dry g)	
Dibenzo(a,h)anthracene	543	Conc. (ng/dry g)	
Benzo(g,h,i)perylene	1,800	Conc. (ng/dry g)	
2-Methylnaphthalene	432	Conc. (ng/dry g)	
1-Methylnaphthalene	215	Conc. (ng/dry g)	
2,6-Dimethylnaphthalene	357	Conc. (ng/dry g)	
1,6,7-Trimethylnaphthalene	133	Conc. (ng/dry g)	
1-Methylphenanthrene	571	Conc. (ng/dry g)	
Organotins			
Monobutyltin	2.72	ug Sn/kg	
Dibutyltin	25.50	ug Sn/kg	
Tributyltin	43.55	ug Sn/kg	
Tetrabutyltin	2.98	ug Sn/kg	

Notes:

LQ - Lab Qualifier

ug Sn/kg - micrograms Tin per kilogram

ng/dry g - nanograms per dry gram

Sample collected on September 26, 2000.

Table 3
Chemical Land Holdings, Inc.
Sample Collection BioGenesis Sediment Evaluation
Analytical Results - Lancaster Laboratories

Analyte	Result	Units	LQ
Semivolatiles			
Phenol	720	ug/kg	U
bis(2-Chloroethyl)ether	720	ug/kg	U
2-Chlorophenol	720	ug/kg	U
1,3-Dichlorobenzene	720	ug/kg	U
1,4-Dichlorobenzene	200	ug/kg	G
1,2-Dichlorobenzene	78	ug/kg	G
2-Methylphenol	720	ug/kg	U
2,2'-oxybis(1-Chloropropane)	720	ug/kg	U
4-Methylphenol	160	ug/kg	G
N-Nitroso-di-n-propylamine	720	ug/kg	U
Hexachloroethane	720	ug/kg	U
Nitrobenzene	720	ug/kg	U
Isophorone	720	ug/kg	U
2-Nitrophenol	720	ug/kg	U
2,4-Dimethylphenol	720	ug/kg	U
bis(2-Chloroethoxy)methane	720	ug/kg	U
2,4-Dichlorophenol	720	ug/kg	U
1,2,4-Trichlorobenzene	100	ug/kg	G
Naphthalene	220	ug/kg	G
4-Chloroaniline	170	ug/kg	G
Hexachlorobutadiene	720	ug/kg	U
4-Chloro-3-methylphenol	720	ug/kg	U
2-Methylnaphthalene	210	ug/kg	G
Hexachlorocyclopentadiene	1,500	ug/kg	U
2,4,6-Trichlorophenol	720	ug/kg	U
2,4,5-Trichlorophenol	720	ug/kg	U
2-Chloronaphthalene	720	ug/kg	U
2-Nitroaniline	720	ug/kg	U
Dimethylphthalate	720	ug/kg	U
2,6-Dinitrotoluene	720	ug/kg	U
Acenaphthylene	610	ug/kg	G
3-Nitroaniline	720	ug/kg	U
Acenaphthene	320	ug/kg	G
2,4-Dinitrophenol	4,300	ug/kg	U
4-Nitrophenol	1,800	ug/kg	U
2,4-Dinitrotoluene	720	ug/kg	U
Dibenzofuran	130	ug/kg	G
Diethylphthalate	720	ug/kg	U
4-Chlorophenyl-phenylether	720	ug/kg	U
Fluorene	430	ug/kg	G
4-Nitroaniline	720	ug/kg	U
4,6-Dinitro-2-methylphenol	1,800	ug/kg	U
N-Nitrosodiphenylamine	330	ug/kg	G

Table 3
Chemical Land Holdings, Inc.
Sample Collection BioGenesis Sediment Evaluation
Analytical Results - Lancaster Laboratories

Analyte	Result	Units	LQ
4-Bromophenyl-phenylether	720	ug/kg	U
Hexachlorobenzene	720	ug/kg	U
Pentachlorophenol	1,800	ug/kg	U
Phenanthrene	2,600	ug/kg	
Anthracene	1,300	ug/kg	
Carbazole	240	ug/kg	G
Di-n-butylphthalate	720	ug/kg	U
Fluoranthene	6,100	ug/kg	
Pyrene	5,900	ug/kg	
Butylbenzylphthalate	9,400	ug/kg	
3,3'-Dichlorobenzidine	1,500	ug/kg	U
bis(2-Ethylhexyl)phthalate	110,000	ug/kg	D
Benzo(a)anthracene	2,800	ug/kg	
Chrysene	3,400	ug/kg	
Di-n-octylphthalate	3,300	ug/kg	
Benzo(b)fluoranthene	3,400	ug/kg	
Benzo(k)fluoranthene	1,100	ug/kg	
Benzo(a)pyrene	2,800	ug/kg	
Indeno(1,2,3-cd)pyrene	1,900	ug/kg	
Dibenz(a,h)anthracene	460	ug/kg	G
Benzo(g,h,i)perylene	1,800	ug/kg	
Pesticides/PCB Aroclors			
alpha-BHC	6	ug/kg	GB
gamma-BHC (Lindane)	74	ug/kg	U
beta-BHC	74	ug/kg	U
delta-BHC	74	ug/kg	U
Heptachlor	74	ug/kg	U
Aldrin	74	ug/kg	U
Heptachlor epoxide	74	ug/kg	U
gamma-Chlordane	74	ug/kg	U
alpha-Chlordane	74	ug/kg	U
4,4'-DDE	210	ug/kg	
Endosulfan I	74	ug/kg	U
Dieldrin	140	ug/kg	U
Endrin	140	ug/kg	U
4,4'-DDD	83	ug/kg	GP
Endosulfan II	140	ug/kg	U
4,4'-DDT	190	ug/kg	P
Endrin aldehyde	140	ug/kg	U
Methoxychlor	740	ug/kg	U
Endosulfan sulfate	140	ug/kg	U
Endrin ketone	140	ug/kg	U
Toxaphene	7,400	ug/kg	U
Aroclor-1016	720	ug/kg	U

Table 3
Chemical Land Holdings, Inc.
Sample Collection BioGenesis Sediment Evaluation
Analytical Results - Lancaster Laboratories

Analyte	Result	Units	LQ
Aroclor-1221	720	ug/kg	U
Aroclor-1232	720	ug/kg	U
Aroclor-1242	720	ug/kg	U
Aroclor-1248	3,100	ug/kg	PD
Aroclor-1254	2,200	ug/kg	PD
Aroclor-1260	720	ug/kg	U
Chlorinated Herbicides			
2,4-D	520	ug/kg	U
2,4,5-TP	220	ug/kg	U
2,4,5-T	220	ug/kg	U
2,4-DB	400	ug/kg	U
Misc. Chemical Properties			
TPH - DRO CA LUFT (Soils)	200	mg/kg	
pH	7.42	S.U.	
Ammonia Nitrogen	602	mg/kg	
TOC Solids/Sludges Combustion	59,200	mg/kg	
Total Cyanide (solid)	1.10	mg/kg	U
Misc. Physical Properties			
Water Content ASTM D2216	116	% by wt.	
Moisture	53.80	% by wt.	
75 mm	100	% passing	
37.5 mm	100	% passing	
19 mm	100	% passing	
4.75 mm	99.60	% passing	
3.35 mm	98.90	% passing	
2.36 mm	94.70	% passing	
1.18 mm	93.60	% passing	
0.6 mm	90.70	% passing	
0.3 mm	88.30	% passing	
0.15 mm	85.20	% passing	
0.075 mm	77.20	% passing	
0.064 mm	74	% passing	
0.05 mm	67	% passing	
0.02 mm	50	% passing	
0.005 mm	14	% passing	
0.002 mm	8	% passing	
0.001 mm	5	% passing	
Inorganics			
Aluminum	18,500	mg/kg	
Antimony	2.60	mg/kg	B
Arsenic	14.80	mg/kg	
Barium	220	mg/kg	
Beryllium	0.98	mg/kg	B
Cadmium	7.60	mg/kg	

Table 3
Chemical Land Holdings, Inc.
Sample Collection BioGenesis Sediment Evaluation
Analytical Results - Lancaster Laboratories

Analyte	Result	Units	LQ
Calcium	5,530	mg/kg	
Chromium	242	mg/kg	
Cobalt	12.60	mg/kg	
Copper	242	mg/kg	
Iron	29,900	mg/kg	
Lead	415	mg/kg	N
Magnesium	6,480	mg/kg	
Manganese	792	mg/kg	
Mercury	4.50	mg/kg	
Nickel	55.20	mg/kg	
Potassium	2,960	mg/kg	N
Selenium	2.20	mg/kg	
Silver	5.40	mg/kg	
Sodium	4,000	mg/kg	
Thallium	2.60	mg/kg	B
Vanadium	60.60	mg/kg	
Zinc	675	mg/kg	
AVS/SEM			
Aluminum	180	umoles/g	
Barium	1	umoles/g	
Beryllium	0.05	umoles/g	
Cadmium	0.05	umoles/g	
Calcium	120	umoles/g	
Chromium	2.70	umoles/g	
Cobalt	0.07	umoles/g	
Copper	1.60	umoles/g	
Iron	230	umoles/g	
Magnesium	120	umoles/g	
Manganese	10	umoles/g	
Nickel	0.40	umoles/g	
Potassium	18	umoles/g	
Silver	0.004	umoles/g	G
Sodium	140	umoles/g	
Vanadium	0.63	umoles/g	
Zinc	8	umoles/g	
Thallium TR	0.01	umoles/g	
Arsenic TR	0.03	umoles/g	
Selenium TR	0.01	umoles/g	
Antimony TR	0.01	umoles/g	U
Lead TR	1.60	umoles/g	
Mercury	0.002	umoles/g	U
Acid Volatile Sulfide	51.10	umoles/g	

Table 3
Chemical Land Holdings, Inc.
Sample Collection BioGenesis Sediment Evaluation
Analytical Results - Lancaster Laboratories

Notes:

LQ - Lab Qualifier

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit (SQL).

G - Organic data indicated the presence of a compound that meets the identification criteria; the result is below the SQL but above the method detection limit (MDL).

D - The organic analyte was quantitated from a diluted analysis.

B - Inorganics - The reported value was obtained from an instrument reading that was less than the sample quantitation limit (SQL).

Organics - The associated analyte was also detected in the method blank.

P - The percent difference between the primary and confirmation column for pesticide/Aroclor analysis is greater than 25 percent.

N - The inorganic analysis is associated with a spike sample not within control limits.

ug/kg - micrograms per kilogram

mg/kg - milligrams per kilogram

umoles/g - micromoles per gram

Sample collected on September 26, 2000.

Attachment 5

BioGenesis Physical Characterization Results

BioGenesisSM ...Cleaning today for tomorrowTM

Via Facsimile

November 8, 2000

Clifford E. Firstenberg, Project Manager
Chemical Land Holdings
Two Tower Center Boulevard, 10th Floor
East Brunswick, NJ 08816

Re: Preliminary evaluation of the physical characteristics of CLH provided sediments for treatment using the BioGenesisSM Sediment Washing process

Dear Mr. Firstenberg,

BioGenesis has completed a preliminary evaluation of the sediment samples that CLH provided. Our preliminary finding is that the sediments are an excellent candidate for washing due to their physical characteristics.

Examination of the sediments revealed the following:

1. Approximately 90% of the sediments have grain sizes between 10 and 50 micrometers.
2. No more than 10% (of the 90%) have a specific gravity less than 1.4.

The combination of less than 10% clay together with approximately 90% silt with specific gravity greater than 1.4 means that the sediment can be effectively treated using the BioGenesis equipment.

Based on our experience with NJ harbor sediment during pilot operations in 1999, and considering that 42% of the sediment washed during those pilot operations was clay, we estimate that washing effectiveness on CLH sediment from the Passaic River will be between 80 to 90%.

Based on the above factors, BioGenesis recommends performance of more extensive demonstration processing.

Sincerely,



Charles L. Wilde
Executive Vice President

cc: Eric Stern, EPA Region 2
Sharon Jaffess, EPA Region 2
Keith Jones, Brookhaven National Laboratory
John Pauling, Roy F. Weston, Inc.

BioGenesis Enterprises, Inc.

7420 Alban Station Blvd. · Suite D-208 · Springfield, Virginia 22150 USA · TEL (703) 913-9700 · FAX (703) 913-9704